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ABSTRACT

The Communication and Symbolic Behavior Scales (CSBS) were developed to standardize communication sampling procedures in assessing preverbal and early verbal stage children. To assess interrater reliability in using the scales with children with developmental disabilities, eight children (ages 33-113 months) with developmental disabilities were videotaped, and the children's communicative and symbolic behaviors were rated by an experienced speech/language clinician and two graduate students in communication disorders using the CSBS. Results support the idea that similar reliability to that reported in the manual can be achieved when the CSBS is used to assess children with developmental disabilities. Lower areas of interrater agreement were noted for the scales measuring "Respondent Acts," "Shared Positive Affect," and "Complexity of Action Schemes." Findings highlight the need for further clarification in some areas of the CSBS manual and the need for adequate training of raters. (JDD)

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RELIABILITY 1

The Interrater Reliability of the Communication and Symbolic Behavior Scales as used with Children with Developmental Disabilities

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Abstract

The purpose of this study was to ascertain measures of interrater reliability on the Communication and Symbolic Behavior Scales (Weatherby & Prizant, 1993) as used with children with developmental disabilities. The current research attempted to determine the inter-rater reliability of the CSBS when used with children with developmental disabilities. This varies from the sample of typically and atypically developing children used for standardization (Wetherby & Prizant, 1993). This is a new instrument and replication of previous reliability levels has not been published. Little is known about the reliability when used only with children who have exhibited developmental delays including pervasive developmental disorders and mental retardation. The present study supports the idea that similar reliability to that reported in the manual can be achieved when the CSBS is used to assess children with developmental disabilities. Further studies are needed to replicate these preliminary findings, and to establish the validity of the CSBS with this population.

**Inter-rater Reliability of the Communication and Symbolic Behavior Scales as
Measured with Children with Developmental Disabilities**

Historically, the early identification of children with communication and language disorders has posed a dilemma. The first evident symptoms attended to by parents and professionals may be a delay in language skills not normally apparent until 12 to 20 months of age. Until recently, the assessment of pre-verbal and early verbal stage children has relied on informal communication sampling procedures. The Communication and Symbolic Behavior Scales (CSBS) (Wetherby and Prizant, 1993) was recently developed to standardize these procedures. The CSBS was developed in an attempt to standardize communication sampling procedures for typically developing children as well as children with communication disabilities in the areas of communication, social/affective signalling and symbolic behaviors (Wetherby and Prizant, 1993).

The current research attempted to determine the inter-rater reliability of the CSBS when used with children with developmental disabilities. This varies from the sample of typically and atypically developing children used for standardization (Wetherby & Prizant, 1993). This is a new instrument and replication of previous reliability levels has not been published. Little is known about the reliability when used only with children who have exhibited developmental delays including pervasive developmental disorders and mental retardation.

METHOD

Setting and Participants

The participants in this investigation were 8 children who were evaluated in bi-monthly

diagnostic clinics for assessing children who were suspected of having autism. The subjects included 7 boys and 1 girl. Four of the boys were diagnosed with autism and one with Pervasive Developmental Disorder-Not Otherwise Specified (DSM III-R), one with a developmental delay and one unspecified. The one girl included had a diagnosis of mental retardation. The mean age for the subjects was 69 months with an age range of 33 months to 113 months old. Their cognitive levels were measured using a standardized psychological tool and the median was 48 months (mean =38.6) with a range of 13 months to 65 months. The language stage for each child who was assessed varied as well. Wetherby and Prizant (1993) define four stages but recognize that some children will not meet the criteria for a single language stage. This was true in the current study. As two children met partial criteria for two stages, only the higher stage was reported in this project. One child exhibited the Prelinguistic stage, no children exhibited the Early One-Word stage, two exhibited the Late One-Word Stage and 5 children demonstrated the Multi-word Stage.

Procedures

Two graduate students in communication disorders were trained in the scoring of the CSBS. Training began by watching the training tapes that were produced by the authors of the assessment and reading the accompanying manual. The students then watched a tape of a child (not included in this study) who had been seen at the SDUAP diagnostic clinic and assessed using the CSBS. A speech/language clinician with experience in the CSBS scored the tape with them. Then the students transcribed a tape individually with no assistance and the results of the tape were compared to the clinician with experience. After this training, the graduate students scored the video tapes included in this study individually. In addition,

the speech/language clinician with experience in using the CSBS rated the assessment tapes. A log of clarification for any issues that may have been unclear in scoring the tapes was maintained. Bi-weekly meetings were held to discuss any unclear issues.

RESULTS

The subtest scales which were utilized in the correlations were defined by Wetherby and Prizant (1993) in the manual of the CSBS and are listed below in Table 1. The inter-rater reliability between each pair of raters was assessed by correlating the Pearson product moment correlation of the individual raw scores for each subtest of the CSBS. This was a replication of the process used in the reliability testing outlined in the manual of the CSBS, using only children with developmental disabilities. Agreement of Language Stage was assessed using Spearman rank order correlation. The results are listed in Table 2.

DISCUSSION

The results of the current study are similar to those reported in the manual of the CSBS. Lower areas of agreement were noted for both the original standardization sample and the current sample for Respondent Acts and Shared Positive Affect. The reliability for Complexity of Action Schemes was significantly lower in the current study than reported in the CSBS manual. Better articulation of rules for coding this, and other categories, might increase reliability. For example, Respondent Acts might need further clarification as to the relation between the communicative act and the examiner's initiation. The raters were unclear as to whether some acts were respondent if they also initiated a new topic. For example, a child may protest a presented object/action by requesting an unrelated object/action after it was presented by the examiner. Further clarification may increase

accuracy of scoring this category. In addition, imitated or echoed acts, whether used functionally or not, were not included in the definition of Respondent Acts in the manual.

This preliminary report on the reliability of the CSBS also highlights the need for adequate training of CSBS raters in order to achieve acceptable reliability. Raters 1 and 2 achieved similar reliability to that listed in the CSBS manual. In the current study, Rater 2 reviewed more tapes, asked more questions of the experienced clinician and received greater training. Another possible influence on these preliminary results was the small number of children rated from the assessment tapes. As noted above rater 1 and 2 scored 8 tapes and rater 3 scored 4. A larger sample would have provided greater stability of the results.

The present study supports the idea that similar reliability to that reported in the manual can be achieved when the CSBS is used to assess children with developmental disabilities. Further studies are needed to replicate these preliminary findings, and to establish the validity of the CSBS with this population.

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Table 1 CSBS Subtest Scales Defined (Wetherby & Prizant, 1993)

Behavior Regulation-Communicative acts used to regulate behavior of another person or restrict environmental goal.

Joint Attention-Communicative Acts used to regulate another's attention to an object, event, or topic of communication.

Sociability of Functions-Proportion of communicative acts used for social interaction plus joint attention.

Conventional Gestures-Gestural communicative acts whose meaning is shared by a general community, including giving, showing, pushing away, open-hand reaching, pointing, waving, nodding head, and shaking head.

Distal Gestures-Gestural communicative acts in which the child's hand does not touch a person or object.

Coordination of Gestures and Vocal Acts-Communicative acts that are composed of a gesture and a vocalization produced simultaneously or overlapping in time.

Vocal Acts without Gestures(Isolated Vocal Acts)-Transcribable vowels or vowel plus consonants combinations that are used as a communicative act and are not accompanied by a gesture.

Inventory of Different Consonants-Total number of different consonants produced as part of communicative acts.

Table 1 continued,

Syllables with Consonants-Vocal communicative acts that are transcribable vowel plus consonant combinations.

Multisyllables-Vocal communicative acts that contain two or more syllables; syllables may be a vowel or a vowel plus a consonant.

Inventory of Different Words-Total Number of different words (i.e., spoken or signed) in communicative acts, a word or word approximation must be used to refer to a specific object, action, or attribute and only that word class.

Inventory of Different Word Combinations-Total number of different word combinations produced in communicative acts.

Respondent Acts-Communicative acts that are in response to the adult's conventional gestures or speech. We included imitated or echoed acts in this category.

Rate-Frequency of communicative acts displayed per minute.

Repair Strategies-Measure of the child's ability to repeat and/or modify a previous communicative act when a goal is not achieved.

Gaze Shifts-Alternating eye gaze between a person and an object and back (i.e., either person-object-person or object-person-object).

Table 1 continued,

Shared Positive Affect-Clear facial expressions of pleasure or excitement, which may or may not be accompanied by a vocalization, that is directed toward the adult with eye gaze.

Episodes of Negative Affect-Clear vocal expressions of distress or frustration that begin when the vocalization is initiated and continue 3-5 seconds or until the child the child has recovered and has displayed a neutral or positive affect.

Language Comprehension-Measure of comprehension of contextual cues, single words, and multi-word utterances.

Inventory of Different Action Schemes-Total number of different action schemes used with objects in symbolic play.

Complexity of Action Schemes-Measure of the child's ability to use action with objects toward self or other agents and ability to sequence different action schemes in pretend play.

Constructive Play-Measure of the child's ability to use objects in combination to construct a product (e.g., a tower).

Communication Composite-Computed by summing the scaled scores for scales 1-18.

Table 2 Interrater Reliability Coefficients for Three Pairs of CSBS Raters

Scales	Raters 1&2	Raters 1&3	Raters 2&3
Behavior Regulation	.96	.05	.66
Joint Attention	.98	-.10	.48
Sociability of Functions	.93	.02	.25
Conventional Gestures	.80	-.46	.29
Distal Gestures	.89	-.37	.45
Coordination of Gesture and Vocal Acts	.87	.78	-.24
Vocal Acts without Gestures	.94	.55	.63
Inventory of Different Consonants	.87	.96	.92
Syllables with Consonants	.97	.52	.04
Multisyllables	.96	.38	.22
Inventory of Different Words	.99	.84	.87
Inventory of Different Word Combinations	.98	.65	.45
Respondent Acts	.78	-.24	-.72

Table 2 continued,

Rate of Communicative Acts	.99	.70	.46
Repair Strategies	.80	.89	.27
Gaze Shifts	.95	1.00	.40
Shared Positive Affect	.52	.98	.11
Episodes of Negative Affect	.94	.00	.58
Language Comprehension	.95	.49	.33
Inventory of Different Action Schemes	.85	.31	.29
Complexity of Action Schemes	.74	.37	.92
Constructive Play	.97	.43	.70
Communication Composite	.94	.65	.41
Language Stage	.72	.71	.71

Note: All correlations for rater 3 are computed with 4 subjects,
those for raters 1 & 2 have 8 subjects.